MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

To: John Bohunsky, Roy Schrameck, Gary Guenther, Robert Courchaine

Subject: B.A.S.F. Wyandotte, North Works, Toxicity Evaluation - Dec. 5-9,

From: Dale DeKraker, Aquatic Biologist, Toxicity Evaluation Unit

Date: January 23, 1978

During the recent toxicity evaluation at the B.A.S.F. Wyandotte Corporation, North Works, Jerry Saalfeld and myself made an inspection of the company's biomonitoring facility that has been constructed at outfall 820180 (001). The purpose of this inspection was to determine if the company was using proper equipment and procedures in their biomonitoring program (a program that is required by the current version of the N.P.D.E.S. Permit.) The following observations were made:

1. The procedures used by the company during the tests are acceptable. Sufficient records are kept and include observations about fish mortality and various effluent characteristics. The test chambers are monitored once every twenty-four hours. The tests are started according to proper procedure. The loadings of the test fish in the test chambers and the effluent flow rates in the chambers themselves are within acceptable limits. The test fish seemed to be in good health.

2. Although the equipment used by the company was for the most part adequate, a few problems do exist with the diluter system itself:

   a. There are a few internal leaks in the diluter head chambers. This allows effluent or diluent to flow between cells in the head chambers themselves and can effect the concentration of effluent delivered to the test chambers.

   b. The diluter does not seem to be cycling correctly. The dilution water head chamber occasionally starts to refill before the cycle is complete. This results in an intermittant double siphoning problem. This too can result in inconsistant concentrations of effluent being delivered to the test chambers and casts doubt as to the actual concentration of effluent present in the test chambers at any given time.

   c. Rubber and plastic are being used at a few points within the dilution system. Although this is a minor problem, these parts should be replaced with glass or some other inert material so that the nature of the effluent will not be altered via leeching or organic uptake. Some plastics can be used providing they do not absorb organics or alter the effluent. Stainless steel is another acceptable material.

   d. It does not appear that the dilution system is being cleaned or washed on a regular basis. The person in charge of the lab at the time of the inspection stated that the diluter was cleaned on demand. The system must be washed after every test to prevent any contamination of the following test.

The above points were discussed with the person in charge of the laboratory at the time of the test.

In addition to the above information we also noted what appeared to be a discharge of untreated effluent from the polyol plant at outfall 820230 (002). The discharge started in the afternoon of December 5, 1977 and lasted until approximately mid-day on December 6, 1977. According to a recent industrial survey (1976) this discharge is a by-pass from the polyol plant and is used only when the treatment pond is overloaded or there has been a large spill in the polyol complex itself.

As was noted in the final report, the presence of an unknown volatile hydrocarbon was detected in the effluent discharged at outfall 001. The hydrocarbon was detected in five grab samples taken during the survey period. A volatile glue-like odor was noted to be present in the effluent throughout the survey period. The odor was the strongest on the morning of December 7, 1977 between 9:00 a.m. and 11:30 a.m. This was also the time period in which a large percentage of the test organisms died. It is interesting to note that a similar pattern was observed during a toxicity evaluation conducted at B.A.S.F. from August 25-29, 1975. At that time test fish mortality occurred during three specific time periods and was noted to coincide with a strong glue-like odor. At that time company officials said that the odor may have been due to the presence of toluene in the effluent. Subsequent analyses of the effluent showed the levels of toluene to be less than 1 mg/l. It is doubtful that the odor detected during the most recent survey could have been due to toluene because our laboratory would have identified the substance as such during the routine quantitative analyses of the effluent grab samples.

Although there is presently no evidence to point to the unknown hydrocarbon as the cause for the mortality observed during the toxicity tests at outfall 001, it is recommended that the company be contacted in an effort to identify the substance and to discuss possible methods of eliminating it from the final effluent.

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